

This correspondence is being deposited with the United States Postal Service as Express Mail addressed to: Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 3, 2003, Express Mail Receipt No. EK 916849908 US.

### SPACE-SAVING COMPACT DISK HOLDER

Richard L. Adams

#### TECHNICAL FIELD

[0001] The present invention relates generally to storage of compact disks, and more specifically to a space-saving apparatus for storing compact disks.

#### BACKGROUND

[0002] Compact disks have become a common medium for storing data, such as computer programs, music files and motion pictures. Digital video disks are a similar medium used to store data in a higher-density format. A person today commonly possesses many digital video disks and compact disks and must find a place to store the many disks.

[0003] There are several conventional means of storing digital video disks and compact disks (herein together referred to as CDs). Conventional CD storage units are often intended to store pre-recorded CDs and hold the CDs in their original jewel cases. Even the newer, thinner jewel cases are many times thicker than the CDs themselves. Thus, storing CDs in their jewel cases takes up more space than storing the CDs alone. CDs can be stored by stacking them on a rod that passes through the holes in the CDs. It is difficult, however, to identify individual CDs in a stack of CDs.

[0004] Figure 1A (prior art) shows a storage rack assembly 10 for CDs. Rack assembly 10 stacks CDs using clips that

are rotatably mounted to a rod 11. A jewel case 12 containing a CD clips into a rack unit 13. Rack unit 13 has a lug 14 with a cylindrical hole and a clip portion 15. Rod 11 passes through the cylindrical hole, and rack unit 13 rotates about the axis of rod 11.

[0005] Figure 1B (prior art) shows rack unit 13 in more detail. A side of jewel case 12 clips into rack clip portion 15 of rack unit 13. Jewel case 12 holds a CD 16 that is many times thinner than jewel case 12. CD 16 rests on a base 17 within jewel case 12. Rack assembly 10 allows an individual jewel case within a stack of jewel cases to be viewed by rotating the individual jewel case out from under jewel cases above the individual jewel case. Where a large number of CDs are stored, however, it is difficult to make a selection because a limited number of jewel cases fit on rod 11. A search for a particular CD would cover multiple storage rack assemblies on multiple rods. Storing a large number of CDs in storage rack assembly 10 requires space to store the associated jewel cases.

[0006] Thus, a holder for CDs is sought that saves space by storing CDs without their jewel cases but nevertheless allows an individual CD within a stack of CDs to be viewed.

#### SUMMARY

[0007] A space-saving compact disk holder holds compact disks in thin, transparent sheaths without jewel cases. Each compact disk fits in a sheath that is connected to a stack segment by a connector. The stack segments have annular bodies that are rotatable about a common axis. In one embodiment, the stack segments are modular and

interlock with one another. In another embodiment, a shaft passes through an axial core of each stack segment, such that the stack segments form a column.

[0008] The stack segments are rotatable about a common axis such that compact disks above a selected compact disk can be moved out of the way to view and/or remove the selected compact disk from the column. The compact disk holder is a base for a desk lamp.

[0009] Other embodiments and advantages are described in the detailed description below. This summary does not purport to define the invention. The invention is defined by the claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The accompanying drawings, where like numerals indicate like components, illustrate embodiments of the invention.

[0011] Figure 1A (prior art) is a side view of a prior art storage rack assembly for CDs.

[0012] Figure 1B (prior art) is a partial cross-sectional view of a rack unit of the storage rack assembly of figure 1A.

[0013] Figure 2A is a side view of one embodiment of a stack segment used to hold CDs.

[0014] Figure 2B is a cross-sectional side view of the stack segment of figure 2A.

[0015] Figure 2C is a top-down view of the stack segment of figure 2A.

[0016] Figure 3 is a top-down view of a connector with an open-ring coupling used to hold CDs.

[0017] Figure 4 is a cross-sectional side view of five stack segments stacked to form a column of stack segments.

[0018] Figure 5 is a side view of five stacked stack segments each holding a CD.

[0019] Figure 6 is a top-down view of a stack segment connected to a sheath by a connector.

[0020] Figure 7A is a side view of another embodiment of a stack segment used to hold CDs.

[0021] Figure 7B is a cross-sectional side view of the stack segment of figure 7A.

[0022] Figure 8 is a cross-sectional side view of three stacked stack segments of the type shown in figure 7A.

[0023] Figure 9 is a top-down view of a sheath connected by a connector to a stack segment of the type shown in figure 7A.

[0024] Figure 10 is a side view of yet another embodiment of a stack segment used to hold CDs.

[0025] Figure 11 is an exploded, perspective view of the stack segment of figure 10 aligned with a shaft.

[0026] Figure 12 is a CD holder with stack segments and a lamp.

#### DETAILED DESCRIPTION

[0027] Reference will now be made in detail to some embodiments of the invention, examples of which are illustrated in the accompanying drawings.

[0028] Figure 2A shows a stack segment 19 according to a first embodiment of a CD holder. Stack segment 19 has a spool-shaped, annular body 20, with an upper disk 21, a lower disk 22 and a circumferential groove 23 between upper disk 21 and lower disk 22. Stack segment 19 has a barrel-shaped extension 24. Barrel-shaped extension 24 has a ring snap fitting 25.

[0029] Figure 2B is a cross-sectional view of stack segment 19 showing annular body 20 and an axial core 26 with a snap groove 27. Axial core 26 functions as a receiving chamber. A barrel-shaped extension of a stack segment disposed immediately above stack segment 19 fits into axial core 26. A ring snap fitting of a stack segment disposed immediately above stack segment 19 fits into snap groove 27.

[0030] Figure 2C is a top-down view of stack segment 19 showing upper disk 21. Circumferential groove 23 is shown with a dashed line.

[0031] Figure 3 shows one embodiment of a connector 28 with a proximal end 29 and a distal end 30. Proximal end 29 of connector 28 has an open-ring coupling 31.

[0032] Figure 4 is a cross-sectional side view of stack segment 19 stacked on four other stack segments to form a column 32 of stack segments. Stack segment 19 is stacked on top of a second stack segment 33 such that ring snap fitting 25 of stack segment 19 fits into a snap groove 34 of second stack segment 33. Axial core 26 of stack segment 19 is centered around axis 35. Each of the stack segments of column 32 can rotate about axis 35.

[0033] Figure 5 is a side view of column 32 of stack segments, also showing a cross section of five associated connectors and five CDs in sheaths. Stack segment 19 is stacked on top of column 32. Connector 28 connects stack segment 19 to a sheath 36 holding a CD 37. Sheath 36 holds CD 37 in a large pocket 38. Distal end 30 of connector 28 fits into a small pocket 39 of sheath 36. Open-ring coupling 31 on proximal end 29 of connector 28 snaps into circumferential groove 23 and wraps more than halfway around circumferential groove 23. The bottom stack segment of column 32 can be snapped into a stable base to support

column 32. Each of the five sheaths is planar and each is orthogonal to axis 35.

[0034] Figure 6 is a top-down view of stack segment 19 connected to sheath 36 by connector 28. Circumferential groove 23 is shown as a dashed line. Open-ring coupling 31 on proximal end 29 of connector 28 snaps around circumferential groove 23. Distal end 30 of connector 28 fits snugly into small pocket 39 of sheath 36. CD 37 is shown as a dashed line within large pocket 38 of sheath 36. The diameter of CD 37 is approximately 12 centimeters. The annular body 20 of stack segment 19 has a diameter of approximately 10 centimeters. Column 32 is stabilized by the relatively large diameter of its component stack segments.

[0035] In the first embodiment, sheath 36 is made of a stiff, clear plastic, such as that used to make liner sleeves of loose-leaf notebooks. CD 37, as well as writing and pictures on the face of CD 37, can be seen through the clear plastic. Upper and lower flaps of large pocket 38 are bonded together by annealing at a high temperature. The upper and lower flaps are connected at seam 40. An additional flap is connected to the upper flap of large pocket 38 at seam 41 and forms small pocket 39.

[0036] In other embodiments, sheath 36, connector 28 and stack segment 19 are integrally formed of one piece of rigid plastic.

[0037] Figure 7A is a side view of a second embodiment of a CD holder. Stack segment 42 has a washer-shaped, annular body 43 and a barrel-shaped extension 44. Barrel-shaped extension 44 has a ring snap fitting 45. Figure 7B is a cross-sectional view of stack segment 42 showing annular body 43 and an axial core 46 with a snap groove 47. A

female coupling 48 is formed in annular body 43. Female coupling 48 has a semi-spherical groove 49.

[0038] Figure 8 shows stack segment 42 stacked on two other similar stack segments. Figure 8 also shows a cross section of three associated connectors and three CDs in sheaths. Ring snap fitting 45 of stack segment 42 fits into a snap groove of a stack segment below stack segment 42. Axial core 46 of stack segment 42, as well as the axial cores of the other two stack segments, can rotate about an axis 50. Sheath 36 holding CD 37 is shown connected to stack segment 42 by a rectangular connector 51. A distal end 52 of connector 51 fits into small pocket 39 of sheath 36. A proximal end 53 of connector 51 snaps into female coupling 48. Connector 51 has a ball snap fitting 54 that snaps into semi-spherical groove 49.

[0039] Figure 9 is a top-down view of sheath 36 connected to stack segment 42 by connector 51. Ball snap fitting 54 fits into semi-spherical groove 49. A second ball snap fitting on connector 51 opposite ball snap fitting 54 snaps into a second semi-spherical groove within female coupling 48. The annular body 43 of stack segment 42 has a diameter of about 15 centimeters.

[0040] Figure 10 is a cross-sectional side view of a third embodiment of a CD holder. Stack segment 55 is washer-shaped and has an axial core 56. Stack segment 55 has a female coupling 57 with a semi-spherical groove 58.

[0041] Figure 11 shows axial core 56 of stack segment 55 aligned with a shaft 59 and an axial core 60 of a second stack segment 61. Stack segment 55, second stack segment 61 and rod 59 are aligned such that shaft 59 can pass through axial core 60 and then through axial core 56. Female coupling 57 within stack segment 55 is shown with

dashed lines. Second stack segment 61 is shown with a female coupling 62.

[0042] Figure 12 shows a CD holder 63 that comprises a plurality of stack segments, including stack segment 55. The plurality of stack segments form a column 64 of stack segments. Sheath 36 contains CD 37. Sheath 36 is connected by connector 51 to a stack segment at the bottom of column 64. A shaft 65 passes through an axial core of each of the plurality of stack segments of column 64. A lamp 66 is disposed at the top of shaft 65. A heavy, stable base 67 supports shaft 65. A cord 68 attached to base 67 provides CD holder 63 and lamp 66 with a power supply.

[0043] In one embodiment, lamp 66 includes a bundle of optical fibers. The bundle extends upward from a light source in base 67 and through the central core of the stack segments. The upper ends of the fibers fan out from one another above the top most stack segment of the column. The light source in the base emits light that travels up the optical fibers and is transmitted out of the upper ends of the optical fibers. The light source may be a kaleidoscope type source that changes the colors of light transmitted through the optical fibers. Light from the optical fibers may, for example, be made to move and dance on the ceiling of a darkened room when the optical fibers are moved, for example by a hand or wind currents.

[0044] Although the present invention has been described in connection with certain specific embodiments for instructional purposes, the present invention is not limited thereto. In one embodiment, a stack segment and a compact disc holder are integrally formed from a single piece of rigid plastic. The compact disc holder may be a



rigid surface upon which the compact disc rests. The compact disc holder may have a central protruding peg that friction fits into the axial hole in a compact disc such that the compact disc is removably fixed onto the rigid compact disc holder. Although stack segments are described above that interlock with one another, stack segments in accordance with some embodiments are smooth washer-shaped structures that can slide over each other such that the axial cores of successive stack segments going up the column are slightly displaced with respect to one another. Accordingly, various modifications, adaptations, and combinations of various features of the described embodiments can be practiced without departing from the scope of the invention as set forth in the claims.